

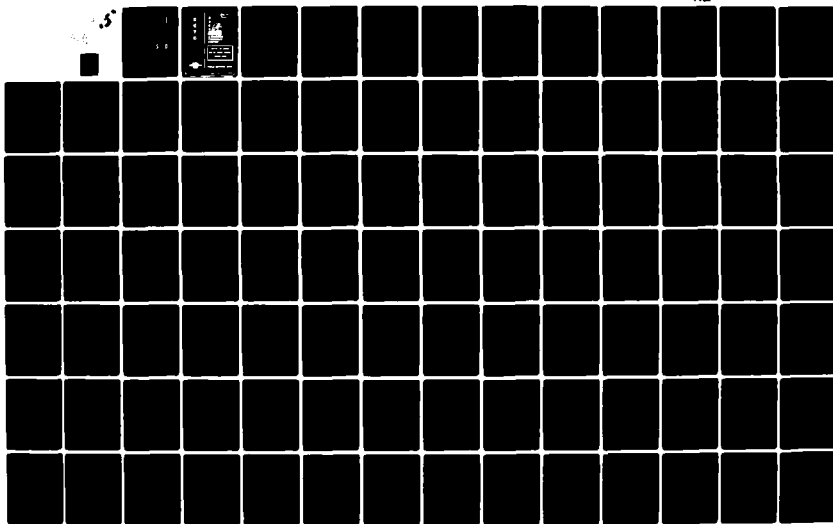
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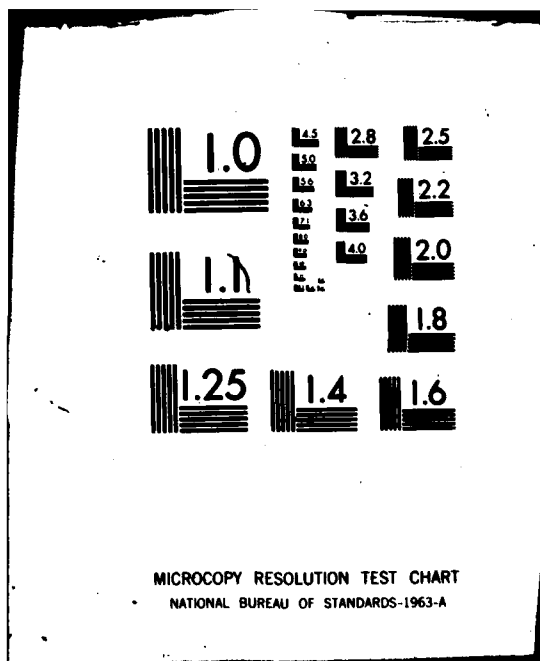
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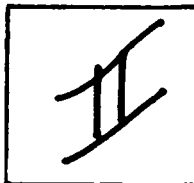




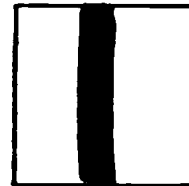
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COMMAND AND CONTROL TECHNICAL CENTER

Computer System Manual CSM MM 237-77

6 September 1977

INSTITUTE FOR DEFENSE ANALYSIS  
TACTICAL WARFARE (TACWAR) MODEL

Program Maintenance Manual

Part 1

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## ABSTRACT

The Institute for Defense Analyses (IDA) Tactical Warfare (TACWAR) model is a fully-automated combat simulation that can be used to assess the interaction of combat forces employing conventional, nuclear, and chemical weapons in a theater-wide campaign. This document presents the information necessary for programmer personnel to maintain the TACWAR model.

## GLOSSARY

<u>Abbreviation</u>	<u>Meaning</u>
AAA	antiaircraft artillery
ABA	airbase attacker
ABAE	airbase attacker escort
ABAS	airbase attacker diverted to SAM-suppression
CAS	close air support
CASA	close-air-support attacker
CASD	close-air-support defender
CASE	close-air-support escort
CASS	close-air-support diverted to SAM-suppression
CEP	circular error probable
COMMZ	communication zone
FEBA	forward edge of battle area
INT	interdiction of division in reserve
QRA	quick reaction alert
SAM	surface-to-air missile
SSM	surface-to-surface missile
TOE	table of organization and equipment





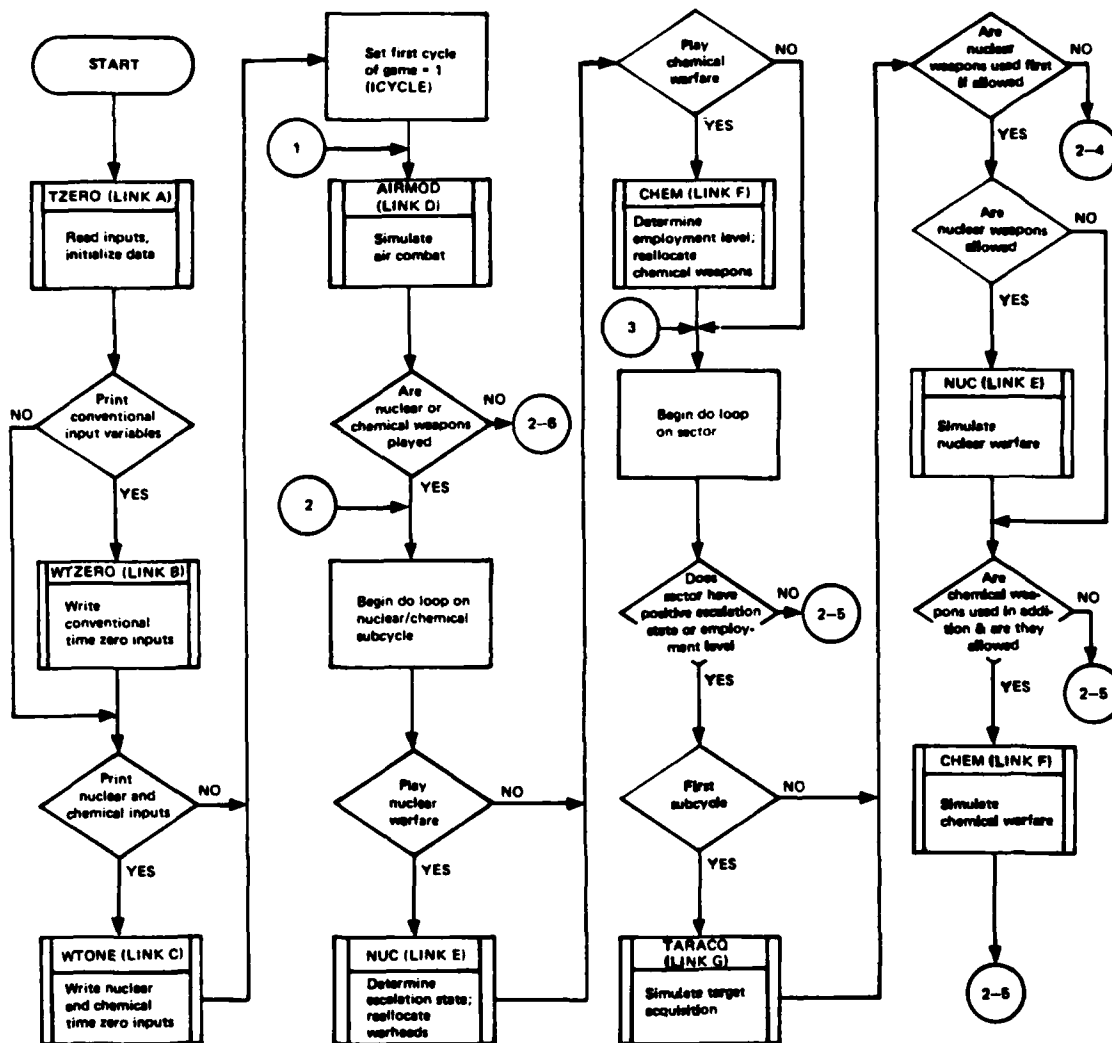
### 1.3 Equipment Environment

The TACWAR model was originally designed to operate on the CDC 6400 by the Institute for Defense Analyses and has been converted by Computer Sciences Corporation to operate on the HIS 6080. The model requires a card reader, a remote terminal (when operating via remote job entry), a disk drive, and a printer as peripheral equipment. The program requires 80K words of core for execution and 78K words of core for compilation of the largest routine. The user may update previously constructed data base files and initiate execution of TACWAR by remote terminal. Output reports generated by TACWAR are printed on the central printer and/or a remote printer.

### 1.4 Programming Conventions

TACWAR is written in the FORTRAN 6000 language and consists of approximately 50,000 lines of code. Approximately .22 hours of CPU time and .06 hours of I/O time are required to process a typical scenario for six cycles with no detailed output reports, only two sets of summary output reports, and no time-t inputs. Each subroutine and variable name contained in the model is mnemonically related to its definition or its use in the program.





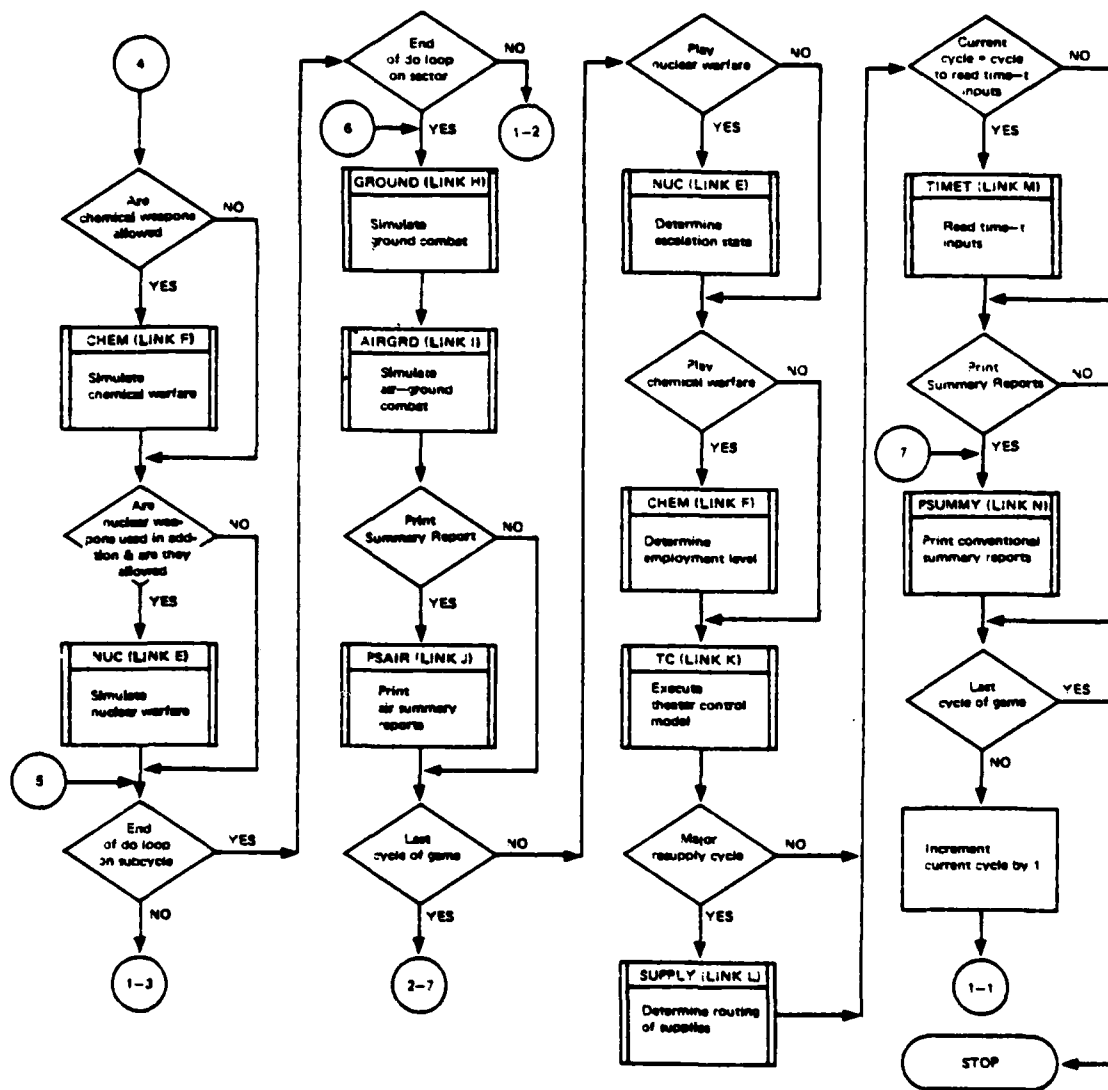


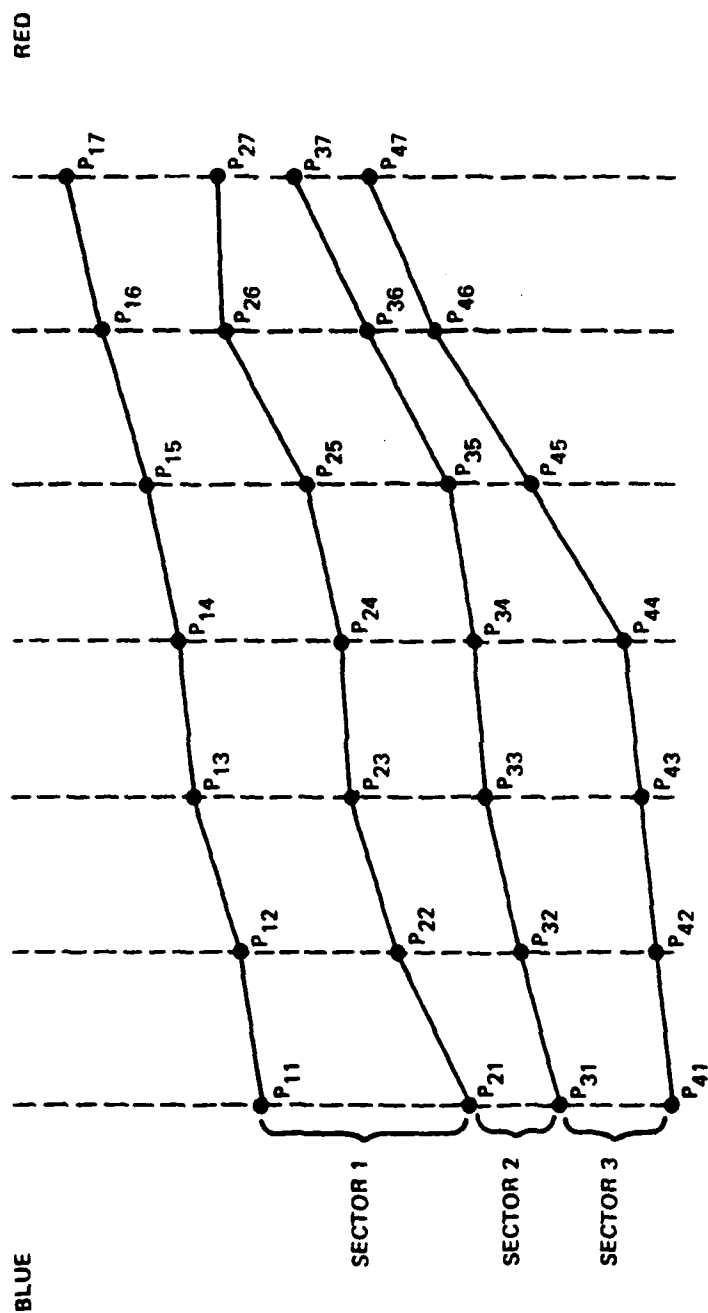
Table 1. Maximum Values for TACWAR Index Limits  
(Part 1 of 2)

<u>Index Limit</u>	<u>Index Definition</u>	<u>Maximum Value</u>
MAD (L)	Maximum number of additional divisions for side L (i.e., number of follow-on divisions in addition to ND(L))	**
NAAC (L)	Number of army air carrier types for side L	3
NAB	Number of air bases	201*
NAC (L)	Number of aircraft types for side L	7
NAFS (L)	Number of air force sensor types for side L	4
NAM (L)	Number of air munition types for side L	6
MAS (L)	Number of battle areas	4
NBA	Number of battle areas	112*
NBNLT	Number of boundary longitude points	7
NCHDW (L)	Number of division chemical systems for side L	4
NCHSW (L)	Number of sector chemical systems for side L	4
NCHTW (L)	Number of theater chemical systems for side L	4
ND (L)	Number of divisions for side L at time-zero	**
NDVNW (L)	Number of division nuclear systems for side L	4
NEML	Number of chemical employment levels	4
NESC	Number of nuclear escalation states	4









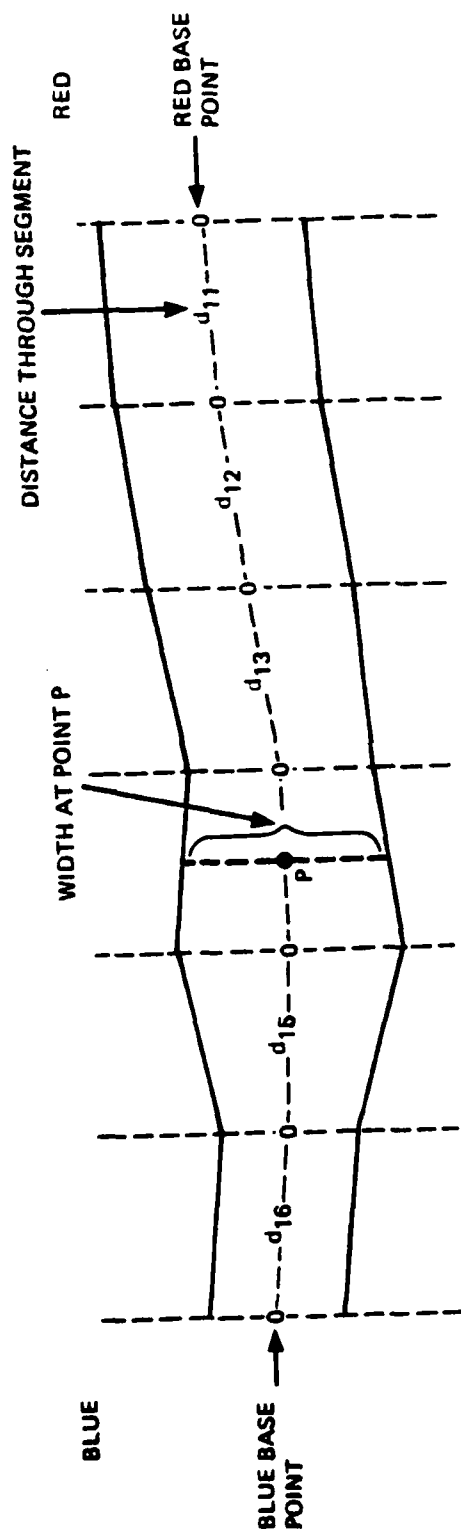


Figure 4. Distances and Widths Through a Sector





























types are combined to give the overall probability that a subunit is detected. The average sensor error and delay times are computed using the individual detection probabilities as weighting factors.



Except on the last cycle of the game, after the ground and air-ground combat simulations have been performed the nuclear model may be accessed again. On this call, which is made only if nuclear warfare is played, the nuclear escalation states are recomputed for input to the theater control model.











model also computes the effectiveness of all divisions and orders the divisions in the first inactive battle area according to effectiveness. Next, the theater control model moves divisions from rear areas forward by the appropriate movement rate. Finally, if the present cycle is one in which the supply model is executed to distribute supplies between nodes, the theater control model updates the node assignments.





2.1.11 Remote Terminal Capability. The TACWAR model can be executed from a remote terminal through a JCL file in Time-Share-System (TSS) format. Appendix D describes the procedure for executing TACWAR through such a file and subsection 4.1.3 discusses the procedures for updating the file.

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